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# SCIENCE

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FRIDAY, MAY 19, 1899.

CARL FRIEDRICH GAUSS AND HIS CHILDREN.

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MSS. intended for publication and books, etc., intended for review should be sent to the responsible editor, Professor J. McKeen Cattell, Garrison-on-Hudson N. Y.

THE life of Carl Friedrich Gauss has been sketched repeatedly, yet, in view of the interest attached to every bit of new information concerning men of genius, we venture to touch upon a few events of his later life and to speak of his descendants.

The 16th of July, 1899, will be the 100th anniversary of Gauss's graduation with the degree of Doctor of Philosophy. The 50th anniversary was a day of celebration at Göttingen. Gauss was still in full possession of his powers and was greatly admired and beloved. His daughter Theresa describes the memorable day in a letter, dated December 5, 1850, and written to her brother Eugene in St. Charles, Mo. In translation the passage is as follows:

"I cannot tell you much of our quiet life; one day and one year is always very much like every other. But they are contented days and years, as father even now in his advanced age still possesses unimpaired health and an always cheerful disposition. A year and a half ago, in July, '49, he celebrated his '50-jähriges Doctorjubiläum'—or rather the University and the city celebrated it for him with general love and sympathy. He himself was very much opposed to having this day noticed, but, without his knowledge, everything had been prepared for it. From near and far the University had invited strangers; father's friends and eminent scholars came, many delegations from other cities, who brought him congratulations, honorary doctor's diplomas and three new orders. From Braunschweig and Göttingen he received honorary citizenship; from the King, con-

given showing the diurnal variation of temperature at Mollendo, Arequipa, Vincocaya and the Chosica station; the diurnal variation of pressure for the Chosica station, and the annual range of the afternoon oscillation of pressure at the Chosica station. Beyond some general remarks in explanation of the tables, there is no discussion of the observations.

Besides the meteorological portion proper, this volume contains a very attractive account, by Professor Bailey, with some excellent illustrations, of the volcano El Misti (19,200 feet), and of the establishment of the now famous Misti meteorological station on its summit. There is also a carefully compiled account of *The Configuration and Heights of the Andes*, which will be of distinct value to geographers.

We presume that Professor Pickering may receive some rather severe criticism in certain quarters for the publication of meteorological data which are so incomplete and which, doubtless, have very many inaccuracies. But we agree with him in believing that, considering the interest of the region in which these observations were made, and the lack of information concerning its meteorology, such results deserve publication, provided careful statement is made in regard to the circumstances under which the data were collected. Professor Pickering and Professor Bailey have both made these conditions perfectly clear, and we believe that the results, when viewed in the light of these statements, will prove not only of great interest, but also of great value.

R. DEC. WARD.

*The Elements of Physical Chemistry.* By J. LIVINGSTON R. MORGAN, PH.D., of the Department of Physical Chemistry, Columbia University. First edition, first thousand. New York, John Wiley & Sons; London, Chapman & Hall, Limited. 1899. Pp. 299.

This little book deals with the gaseous state, the liquid state, the solid state, solution, the rôle of the ions in analytical chemistry, thermochemistry, chemical change, including equilibrium and chemical kinetics, phases and electrochemistry.

The aim of the author is to present the elements of physical chemistry in brief form to

those who do not have the time or opportunity to go more extensively into the subject. An examination of the work will bring out much that is of interest and importance, and a careful study of it will help a beginner to obtain an insight into the subject. But the objection might be raised to the work as a whole that it seems to deal rather with conclusions and generalizations than with the evidence upon which such are based. Further, there are many omissions which it is difficult to account for. Thus, under liquids no mention is made of Kopp's work on atomic volumes; of the work of Pulfrich, Landolt, Gladstone, Brühl and others, on the refractivity of liquids; of the rotation of the plane of polarized light and the Le Bel-Van't Hoff hypothesis; of the work of Perkins, and of Rodger and Watson on magnetic rotation; of Thorpe and Rodger on viscosity; of Ramsay and Shields on the surface-tension of liquids as applied to the determination of molecular weights. It would seem that such important work as the above ought to be referred to briefly even in an elementary treatise designed to cover the whole field of physical chemistry. An examination of the book will show, further that much of the more recent experimental work has not been taken into account, indicating that text-books which have been published several years, rather than the original literature, have been drawn upon as the source of material. As in most text-books, so here, an occasional statement is not quite accurate. But what book is perfectly logical, thoroughly comprehensive and rigidly exact throughout?

HARRY C. JONES.

#### BOOKS RECEIVED.

*The Anatomy of the Central Nervous System of Man and of Vertebrates in General.* LUDWIG EDINGER. Translated from the fifth German edition by WINFIELD S. HALL, assisted by P. L. HOLLAND and E. P. CARLTON. Philadelphia, F. A. Davis Company. 1899. Pp. xi + 446.

*Marriages of the Deaf in America.* EDWARD ALLEN FAY. Washington, Gibson Bros. 1898. Pp. vii + 527.

*A Century of Vaccination.* W. SCOTT TEBB. London, Swan, Sonnenschein & Co. 1899. Second Edition. Pp. 452.

*Essai critique sur l'hypothèse des atomes dans la science contemporaine.* ARTHUR HANNEQUIN. Paris, Alcan. 1899. Second Edition. Pp. 457.

*Social Phases of Education in the School and the Home.* SAMUEL T. DUTTON. New York and London, The Macmillan Company. 1899. Pp. viii + 259.

*The Fur Seals and Fur Seal Islands of the North Pacific Ocean.* DAVID STARR JORDAN. Washington, Government Printing Office. 1898. Pp. 606 and 13 Plates.

#### SCIENTIFIC JOURNALS AND ARTICLES.

*American Chemical Journal*, May. The Action of Metals on Nitric Acid: By P. C. Freer and G. O. Higsley. The reduction of strong acid is due to the metals alone, but with dilute acid both metal and hydrogen take part in the reduction. On the Dissociation of Phosphorus Pentabromide in Solution in Organic Solvents: By J. H. Kastle and W. A. Beatty. On the Color of Compounds of Bromine and of Iodine: By J. H. Kastle. The explanation offered is that the color is due to a slight dissociation of the solid substance. On the Formation of Potassiums B-ferricyanide through the action of Acids on the Normal Ferricyanide: By J. Locke and G. H. Edwards. A very small amount of acid is sufficient to produce this change without the presence of any oxidizing agent. Trinitrophenylmalonic Ester: By C. L. Jackson and J. I. Phinney. The Relation of Trivalent to Pentavalent Nitrogen: By A. Lachman. The authors report the results so far obtained in an attempt to establish the trivalent or pentavalent condition of nitrogen, in various compounds, by the action with zinc ethyl.

J. ELLIOTT GILPIN.

#### SOCIETIES AND ACADEMIES.

NEW YORK ACADEMY OF SCIENCES—SECTION OF BIOLOGY, MARCH 14, 1899.

OBSERVATIONS on the Germ Layers of Teleost Fishes: F. B. Sumner.

Mr. Sumner showed that Teleost eggs can be divided into two types according to their approach to the holoblastic form of cleavage; that germ disc and yolk cannot strictly be contrasted as epiblast and hypoblast respectively; that the germ-ring arises either by involution or delamination or both; that the 'prostoma' of

Kupffer is a reality. Kupffer's contention that the prostoma represents the entire blastopore is, however, wrong. Mr. Sumner showed also that the hypoblast in the stone-catfish is derived partly from the posterior lip of the prostoma and partly from the germ-ring; perhaps wholly from the prostoma in the trout; that the function of Kupffer's vesicle, which arises as a cleft between the prostomal entoderm and the involuted margin of the blastoderm, is probably the absorption of fluid nutriment elaborated from the yolk by the periblast.

Further Notes on the Echinoderms of Bermuda: H. L. Clark. Presented by Professor C. L. Bristol.

Dr. Clark's paper sums up the work on the Echinoderms collected by the New York University Expedition in the summers of '97 and '98, and presents a check list of the Echinoderms thus far reported from Bermuda. The collection of 1898 was especially rich in holothurians, containing many species hitherto collected, adding several others to the list from Bermuda, and one new to science. From his work on *Stichopus* Dr. Clark suggests that the different forms found in Bermuda may be mature and immature individuals of *S. möbii* (Semp.). *Synapta vivipara* was found under conditions widely different from those in Jamaica. The new *Synapta* is allied to *S. inhaerens*, and Dr. Clark has named it *S. acanthia*.

The Echinoderms from Bermuda are distributed as follows: Asteroidea, 4; Ophiuroidea, 7; Echinoidea, 8; Holothuroidea, 10.

The Sequence of Moults and Plumages of the Passerine Birds of New York State: Jonathan Dwight, M. D.

Dr. Dwight fully described the process of moulting and its relation to the plumage of about one hundred and fifty species of land birds common to eastern North America. The early plumage of these birds was described, together with the time and method of the acquisition of later plumages. Stress was laid upon the underlying principles of the sequence or succession of plumages peculiar to each species, and the moults and plumages were classified according to a definite scheme by the author.

GARY N. CALKINS,  
Secretary.